Chapter 2
Site Evaluation Progress

By the end of FY94, more than 38,300 potential hazardous waste sites had been identified and added to the Superfund inventory. EPA continued its progress in evaluating these sites; by the end of the year, EPA and states had evaluated more than 95 percent of these sites for potential threats to human health and the environment. To enhance site evaluation, EPA continued implementing the streamlined, single-assessment process of the Superfund Accelerated Clean-Up Model (SACM). EPA also proceeded with ongoing efforts to address technical complexities associated with lead and radionuclide contamination, and improved site evaluation guidance.

2.1 Site Evaluation Process

The Superfund site evaluation process begins when EPA is notified of a potentially threatening hazardous waste site or incident. The Agency records basic information about the site in the inventory of potential hazardous waste sites maintained in the CERCLA Information System (CERCLIS), which also tracks subsequent actions and decisions at the site. At sites that pose an immediate threat to human health, welfare, or the environment, EPA conducts a removal action to address the threat. At other sites, a two-stage assessment is conducted; the assessment consists of (1) a preliminary assessment (PA) to determine whether a potential threat exists, and (2) a site inspection (SI) to determine the relative threat posed and to evaluate the site for possible listing on the National Priorities List (NPL). The NPL is the list of sites designated for long-term remedial evaluation and response.

At any point in the evaluation process, EPA may determine that the Superfund evaluation of the site is complete and that no further steps to list the site on the NPL will be taken. EPA places such sites in the “archival category, "no further remedial action planned”" This decision does not necessarily mean that there is no hazard associated with the site; it merely means that, based on available information, the site does not meet the criteria for placement on the NPL. Sites not considered appropriate for the NPL might be addressed under the Resource Conservation and Recovery Act (RCRA), state laws, or other authorities. A Superfund removal action may be taken after a site is placed in the "no further remedial action planned" category or at any time during the evaluation process if an immediate threat to human health or the environment is identified.

With full implementation of SACM in FY94, the Agency identified appropriate candidate sites and subsequently conducted many integrated assessments. Integrated assessments involve consolidating some or all of the assessment steps, as well as other site studies, into a single, integrated site evaluation. EPA also created new fields in CERCLIS to track the various integrated assessments, and issued directions on the use of these fields.

2.2 Fiscal Year 1994 Progress

During FY94, EPA continued its progress in identifying and assessing potential hazardous waste sites.

2.2.1 CERCLIS Site Additions: Discoveries and Removals

When the Agency is notified of a site that may pose a threat, EPA records basic information about the site in CERCLIS, the national inventory of potential hazardous waste sites. EPA is notified of potential hazardous waste sites in a variety of ways. Information may be provided by states, handlers of hazardous materials, or concerned citizens. Local law enforcement officials may submit a formal report to EPA or facility managers may notify EPA of a release as required by CERCLA Section 103. Section 103 specifies that a person, such as a manager in charge of a vessel or facility, immediately report to the National Response Center any release of a hazardous substance of an amount that is equal to or greater than the reportable quantity for that substance. The National Response Center operates a 24-hour hotline for immediate notification. Penalties are imposed for failure to comply with this reporting requirement.

EPA added more than 1,100 sites to CERCLIS during FY94, bringing the total number of sites under Superfund to more than 38,600. PAs have been or will be conducted to assess threats posed by the sites.

2.2.2 Preliminary Assessments Completed

When notified of a potential hazardous waste site, EPA or the state will conduct a PA to assess the threat posed by the site. The PA can include either on-site or off-site reconnaissance activities, such as an on-site visit or survey, an off-site perimeter survey, or collection of data from local authorities. EPA or the state will also review other existing site-specific information for such items as past state permitting activities, local population statistics, and any other information concerning the site's potential effect upon the environment. PA activities enable the Agency or state to determine whether further study of the site or removal assessment/action is necessary, or whether the site should be categorized as "no further remedial action planned". If the PA indicates that a potential threat to human health or the environment is posed by the site, EPA will perform an SI to determine whether the site should be proposed for listing on the NPL.

EPA and states conducted more than 900 PAs in FY94. Since the inception of Superfund, EPA and states have completed PAs at approximately 36,100 sites. The Agency has classified approximately 44 percent of sites where a PA has been conducted as "no further remedial action planned;" the remainder have proceeded to the SI stage for more extensive evaluation.

2.2.3 Site Inspections Completed

The purpose of the SI is to continue the site evaluation to determine whether a site is appropriate for listing on the NPL. The SI usually includes collecting and analyzing environmental and waste samples to identify

- The hazardous substances present at the site;
- The concentrations of these substances;
- Whether the substances are being released or there is potential for their release; and
- Whether the identified hazardous substances are attributable to the site.

During the SI, data are gathered through increasingly focused collection efforts. For sites judged to be prospective candidates for the NPL, the data will be used to calculate a score using the Hazard Ranking System (HRS). The HRS serves as a screening device to evaluate and measure the relative threat a site poses to human health, welfare, or the environment and to determine whether placement on the NPL is warranted. The HRS evaluates four pathways through which contaminants from a site may threaten human health or the environment: ground water, surface water, soil, and air. At any time during the SI, EPA may make a "no further remedial action planned" decision based on the data.

The Agency completed nearly 600 SIs during FY94 for a total of more than 17,000 SIs conducted since the inception of the Superfund program. Based on these assessments, more than 1,355 sites have been proposed to, listed on or deleted from the NPL.

Sites deleted from the NPL reflect an activity required to be reported. Approximately 28 percent of these SIs have resulted in "no further remedial action planned" decisions.

2.2.4 Site Inspection Prioritization

When the revised HRS was promulgated in March 1991 in response to a mandate in SARA, EPA could no longer use the original HRS for making NPL determinations. At that time, final decisions were pending for several sites that were evaluated through the SI stage under the original HRS. (A final decision may be to list a site on the NPL or make a "no furhter remedial action planned" determination.) To expedite final decisions for the remaining sites, EPA developed the SI prioritization (SIP) process.

The SIP process is designed to gather additional data required under the revised HRS to evaluate sites for listing on the NPL. The SIP also may assist in identifying candidates for early actions under SACM. SIPs are limited to 6,600 sites where an SI was conducted prior to August 1, 1992.

EPA completed more than 1,500 SIPs in FY94. EPA also determined that more than 700 sites did not require a SIP, reducing the number of sites where SIPs are still required to 2,700. Most SIPs completed have resulted in "no further remedial action planned" decisions; in the past three years, 70 percent of the SIPs completed have resulted in "no further remedial action planned" decisions.

2.3 National Priorities List

The NPL is the list of sites for long-term remedial evaluation and response. EPA evaluates the potential hazard of sites using the HRS. If a site scores 28.50 or higher, the Agency proposes the site for listing on the NPL, solicits public comments for consideration, and then either announces the final listing of the site on the NPL or removes the site from consideration for listing (classified as "no further remedial action planned"). A site remains on the NPL until no further CERCLA response action is appropriate. When this condition is met, EPA deletes the site from the NPL.

2.3.1 National Priorities List Update

At the end of FY94, there were 1,355 sites proposed to, listed on, or deleted from the NPL: 1,226 currently listed sites, 64 proposed sites, 64 deleted sites where all CERCLA clean-up goals have been achieved, and 1 site that was deleted because it was deferred to another authority for cleanup. Sites deleted from the NPL reflect an activity required to be reported. Exhibit 2.3-1 illustrates the historical number of final sites on the NPL for each fiscal year since SARA was enacted in 1986. At the end of FY94, the 1,355 sites proposed to, listed on, or deleted from the NPL consisted of the following:

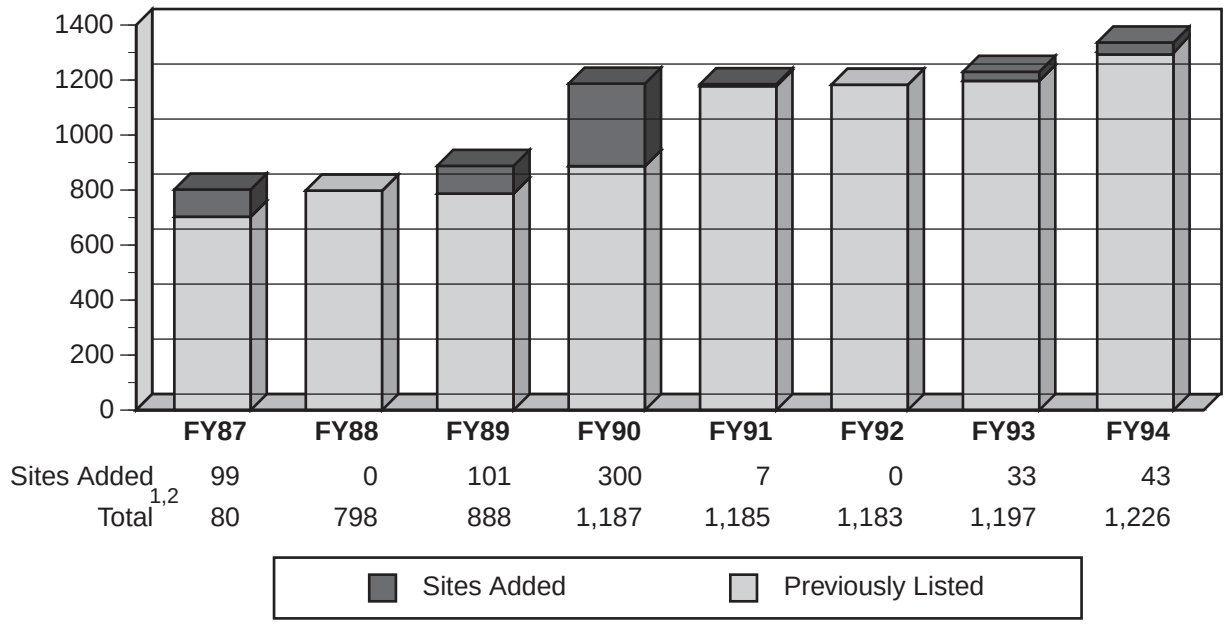
- 1,195 non-federal sites (1,076 currently listed sites, 54 proposed sites, 64 deleted sites, and 1 site that was deferred); and
- 160 federal sites (150 currently listed sites and 10 proposed sites).

Updates to the NPL during FY94 included proposal of 36 sites (22 non-federal and 14 federal facility sites), final listing of 43 sites (19 non-federal and 24 federal facility sites, that include 3 re-classified sites) and deletion of 13 sites (non-federal). Ten sites were proposed for deletion during the fiscal year, including 7 of the 13 sites that were deleted. These proposals to and listings on the NPL were included in two proposed rules (NPL Proposals 16 and 17) and two final rules. The proposed rules were published in the Federal Register on January 18, 1994 (16 non-federal sites and 10 federal sites) and August 23, 1994 (6 non-federal sites and 4 federal sites). The final rules were published in the Federal Register on February 23, 1994 (1 non-federal site) and May 31, 1994 (18 non-federal sites and 24 federal sites).

2.3.2 Relationship Between CERCLIS and NPL Update

CERCLIS is used to track the discovery of potential hazardous waste sites, including those that are subsequently listed on the NPL, and to track actions at these sites. Of the more than 38,600 sites in CERCLIS at the end of FY94, 1,355 were either

Exhibit 2.3-1
Final NPL Sites for Fiscal Year 1987 Through Fiscal Year 1994



	FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94
Sites Added	99	0	101	300	7	0	33	43
Total[1,2]	80	798	888	1,187	1,185	1,183	1,197	1,226

[1] This graph illustrates *final* NPL sites only and reflects the fact that EPA deleted 13 sites from FY80 to FY86, 4 sites in FY88, 11 sites in FY89, 1 site in FY90, 9 sites in FY91, 2 sites in FY92, 11 sites in FY93, and 13 sites in FY94. At these deleted sites, all CERCLA clean-up objectives were achieved. In FY93, one additional site was deleted because it was deferred to another authority for cleanup. Also, eight sites were either voluntarily removed from the NPL or removed from the NPL by court order (seven sites in FY93 and one in FY94). The total of *final,* proposed, and deleted NPL sites as of September 30, 1994 was 1,355.

[2] The total number of sites listed final on the NPL from 1983 to 1986 was 703.

51-044-19

Source: *Federal Register* notices through September 30, 1994.

proposed to, listed on, or deleted from the NPL. Although the sites on the NPL are a relatively small subset of the inventory in CERCLIS (approximately 3.5 percent), they generally are the most complex and environmentally significant sites. Under CERCLA, EPA can only use the Trust Fund for long-term remedial actions at NPL sites. Fund money, however, can be used to conduct a removal action at a site, whether or not it is on the NPL. Chapter 4 of this report highlights progress in remediating NPL sites, and Chapter 3 of this report discusses removal actions at NPL and non-NPL sites.

2.4 Site Evaluation Support Activities

EPA manages two support programs dedicated to addressing lead and radionuclide contamination because these contaminants present special hazards and problems. During FY94, EPA continued its progress under these programs. Under the lead program, EPA continued to work on risk assessment procedures and tools, revised a model and guidance that establish a soil-screening level for residential exposure scenarios, and continued to analyze results from a three-city study on lead contamination. Under the radiation program, EPA continued to develop Superfund guidance, examined environmental fate and transport modeling for radionuclides, and provided technical support to the Regions in addressing radioactive sites. The Agency also worked to enhance site evaluation guidance.

2.4.1 Lead Program Progress

Lead is one of the most frequently found toxic substances at Superfund sites. Lead is also a major contaminant and health threat to children in urban areas that are not associated with Superfund sites. EPA is attempting to better assess the effects of lead contamination in three initiatives: developing the Integrated Exposure Uptake Biokinetic (IEUBK) Model, revising soil-lead guidance, and conducting the Three-City Lead Study.

The Integrated Exposure Uptake Biokinetic Model

To aid Regional risk managers in establishing lead clean-up levels, EPA's Toxics Integration Branch (TIB) is developing risk assessment procedures and tools such as the IEUBK Model. This model estimates blood-lead levels in children who may have been exposed to lead through air, soil, dust, drinking water, paint, or their diet. The IEUBK Model uses site-specific data or, if no such data are available, default values that are based on national averages. Risk managers can also use the model with reasonable parameter assumptions to evaluate clean-up options.

During FY94, EPA continued to work on a manual that will provide guidance to risk assessors and managers for using site-specific data in the IEUBK Model, and for identifying the most appropriate methods for collecting data. FY94 activities also included further validation of the IEUBK Model by studying data from Superfund sites contaminated with lead from battery recycling, mining, and smelting activities.

Soil-Lead Directive

In FY94, the Office of Solid Waste and Emergency Response (OSWER) released a revised guidance document, Revised Interim Soil-Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. The guidance presents a streamlined approach for determining protective levels for lead in soil at Superfund and RCRA corrective action sites. Rather than setting a national clean-up level, the guidance establishes a soil-screening level for residential exposure scenarios. The guidance also describes how to develop site-specific preliminary remediation goals for Superfund sites and media clean-up standards at RCRA corrective action sites. The process proposed in the revised guidance is more protective of human health and the environment than the original guidance because it considers multiple sources of lead exposure and accounts for special situations involving ecological sensitivity or sensitive subpopulations. The guidance also encourages voluntary cleanups of lead contamination.

The Revised Interim Soil-Lead Guidance sets a screening level of 400 parts per million for residential exposure scenarios and recommends use of the IEUBK Model for predicting residential exposure. Sites with soil-lead levels below the screening level generally require no further action; sites with soil-lead levels above the screening level require further study.

The guidance also takes into account the potential role of multiple sources of lead (e.g., interior and exterior paint and indoor dust) in contributing to elevated blood-lead levels at a site. The guidance offers a flexible approach that allows for remediation of lead sources, other than soil, that may contribute significantly to elevated blood-lead levels.

The Interim Final Soil-Lead Guidance also clarifies the relationship between guidance on Superfund and RCRA corrective action cleanups and EPA's guidance on lead-based paint hazards. When the Office of Pollution Prevention and Toxics releases its health-based standards for soil, paint, and dust under the Toxic Substances Control Act Title IV, Section 403, OSWER will issue the final soil-lead directive.

Three-City Lead Study

EPA continued to analyze data generated by the Three-City Lead Study. The purpose of the study, which is being conducted by EPA with the support of the Center for Disease Control and the Department of Agriculture, is to determine whether reducing lead in residential soil and dust (e.g., interior house dust and exterior soil dust) results in a decrease of blood-lead levels of children exposed to the contaminant. Data were gathered from groups of children in selected

areas of Baltimore, Boston, and Cincinnati. Each area was chosen on the basis of several factors, including the age of the housing, the reported incidence of lead poisoning, the expected turnover rate for residents, and the potential for neighborhood involvement in the project.

During FY94, EPA's Office of Emergency and Remedial Response (OERR) and the Office of Research and Development (ORD) analyzed combined data sets for the three cities. OERR and ORD prepared a draft report that integrated the results of the data set, circulated the draft report for internal review, and provided it to external peer reviewers. EPA also held a number of public forums to discuss comments received on the report and began preparing the final draft.

2.4.2 Radiation Program Progress

During the fiscal year, EPA made progress in addressing technical complexities associated with site assessment, risk assessment, and clean-up technology evaluation for sites contaminated with radionuclides. Specific activities included developing Superfund guidance, examining environmental fate and transport modeling, conducting technology demonstrations and evaluations, and providing technical support to the Regions.

Site Assessment

Through an interagency agreement with the Agency for Toxic Substances and Disease Registry, ORIA provided assistance in conducting site evaluations and health assessment in areas near DOE nuclear weapons productions facilities, including the San Ildefonso Indian Pueblo near the Los Alamos National Laboratory, the environs surrounding the Fernald Envionmental Management Project, and the areas surrounding the Mound Laboratory site.

Superfund Program Guidance

During FY94, EPA continued its efforts to address radiation issues through guidance development in the following areas:

- Health Effects Assessment Summary Tables (HEAST): TIB cooperated with the Office of Radiation and Indoor Air (ORIA) to continue updating toxicity information on radionuclides for HEAST.
- Radiation Exposure and Risk Assessment Manual: ORIA is developing guidance for radionuclide toxicity assessment. At the end of FY94, the draft manual was undergoing peer review.
- Soil Treatability Guidance: ORIA continued development of guidance for determining the appropriate treatment options for soil contaminated with radionuclides. ORIA assembled a technical review team with representatives from ORIA, OERR, and DOE, and incorporated their comments and suggestions into the draft guidance.
- Development of Clean-Up Levels: ORIA continued to develop standard clean-up levels for radioactive materials in soil and ground water at federal facility sites. The draft technical support document for the proposed Radiation Site Clean-Up Regulation was submitted to the Science Advisory Board's Radiation Advisory Committee for review.

Environmental Fate and Transport Modeling

Representatives from OSWER and ORIA continued to work with representatives from the Department of Energy (DOE) and the Nuclear Regulatory Commission as part of an interagency workgroup evaluating environmental fate and transport modeling for radionuclides. In 1994, the workgroup completed a guidance document entitled A Technical Guide to Ground-Water Model Selection at Sites Contaminated with Radioactive Substances. The document addresses the selection of ground-water flow and contaminant transport models. The workgroup also continued to prepare three additional technical documents:

- Evaluating Technical Capabilities of Ground-Water Models Used to Support the Cleanup of

Low-Level Radioactive Waste Sites: An Illustrative Critique of Three Representative Models: This draft report describes a process for critically evaluating the technical capabilities of ground-water models, using three models that have been used in remedial investigation/ feasibility studies.

- Draft Report: Three Multimedia Models Used in Support of Cleanup Decision making as Hazardous, Mixed, and Radioactive Waste Sites: A Technical Evaluation of MEAS, MMSOILS, and PRESTO-EPA-CPG. Reviews three multimedia models of interest to the participants based on documentation published in reviews, personal interviews with the model developers, and on model summaries extracted from computer databases and expert systems.
- Draft Report: A Review Guide for Model Application at Sites Contaminated with Radioactive Substances, Hazardous, and Mixed Waste Substances. Documents a process by which ground-water flow and transport models may be applied, and how applications by others may be systematically reviewed during each phase of the remedial process.

Regional Assistance

ORIA provides technical assistance to Regional On-Scene Coordinators and Remedial Project Managers (RPMs) in addressing NPL sites contaminated with radioactive materials. In FY94, The ORIA National Air and Radiation Environmental Laboratory (NAREL), assisted by the ORIA Las Vegas facility, continued to serve as an EPA technical support center (TSC) in the areas of site-specific remedial technologies, detection and measurement of radioactive contamination, site remediation oversight, risk assessment, and document review. ORIA and its laboratories provided the following site-specific support to Regional programs:

- In Region 1, ORIA provided analytical support for the Finberg Field Assessment.
- In Region 2, ORIA continued to assist the Region in addressing cleanup issues at the Maywood, New Jersey NPL. ORIA also reviewed proposed alternatives for remedial action and assisted in remedial technology evaluation for the W.R. Grace site in Wayne, New Jersey.
- In Region 4, ORIA continued to provide assistance for oversight of the DOE remediation efforts in Paducah, Kentucky, and Oak Ridge, Tennessee. OIRA provided support for the characterization of the David Witherspoon site in Knoxville, Tennessee.
- In Region 5, ORIA supported risk assessment and document review activities, as well as decision-making on the cleanup of thorium, at the Kerr-McGee/West Chicago site. ORIA provided analytical support for the characterization of the Kerr-McGee/West Chicago Sites; the Ottawa, IL site; the Dial Services site in Coleveland, OH; and the Portsmouth Gaseous Diffusion Plant.
- In Region 6, ORIA provided analytical support for the characterization of the Tex Tin Corporation site located in Texas City, TX.
- In Region 7, ORIA assisted in evaluating remedial technologies and determining the clean-up level for thorium at the Weldon Springs site. ORIA also supported OERR and the Region in recommending interim safety measures at the St. Louis site.
- In Region 8, ORIA assisted in evaluating remedial technologies for the Denver Radium site. For the Rocky Flats site, ORIA worked with the RPM on technical issues associated with the site; ORIA provided document review support for the site.
- In Region 9, ORIA provided support for the characterization of the King Tutt Mesa Aggregate site in Oak Springs, NM and soil characterization techniques for the Hunter's Point Naval Shipyard Annex. ORIA completed and transmitted to the Region the report "Confirmatory Study of Plutonium in Soil from the Southeast Quadrant of the Lawrence Livermoore National Laboratory." ORIA provided analytical support

in the analysis of samples from a disposal site in George Air Force Base. At the request of the RPM, ORIA will provide, during FY95, technical support for quality assurance and quality control oversight of radiation surveys in preparation for closure at the Marc Island Naval Shipyard.

- In Region 10, ORIA supported technology evaluations for the NPL site at DOE's Idaho National Engineering Laboratory. ORIA also assisted the RPM at the Teledyne Wah Chang site in reviewing documents and recommending that the potentially responsible party conduct a more thorough characterization of the radioactivity at the site.

2.4.3 Site Evaluation Regulations and Guidance

OERR published the following site evaluation guidance during FY94:

- Deletion Policy for Resource Conservation and Recovery Act Facilities, published in the Federal Register on March 20, 1995 (60 FR 14641). This policy allows sites meeting certain criteria to be deleted from the NPL in order to defer them to RCRA authority. Fewer than 30 final NPL sites are likely to qualify for deferral under this policy.